1055-37 Mechanism of L-Arginine Myocardial Infarct Reduction is Primarily an Inhibition of Reperfusion Injury

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L-Arginine, a nitric oxide precursor, decreases infarct size in models of ischemia and reperfusion. However, it is unclear whether the primary benefit is due to ischemic endothelial preservation or inhibition of reperfusion injury. We hypothesized that the prevention of damage at the time of reperfusion offers the primary beneficial effect. In 22 porcine hearts, the left anterior descending artery (LAD) was occluded distal to its second diagonal branch for a total period of 90 min. After one hour, the animals were heparinized, and divided into four groups.

Group	Intervention [N]
1	No additional intervention [6]
2	Infusion of normal saline into the coronary sinus (7 cc/min) [6]
3*	Peripheral administration of L-arginine [5]
4*	Retrograde L-arginine delivery via the coronary sinus (7 cc/min) [5]

*The dose of L-arginine was a 30 mg/kg bolus followed by an infusion of 10 mg/kg/min for 30 minutes.

After 90 minutes of ischemia, the snare was released, and the myocardium was reperfused for three hours. The animals were then euthanized. The LAD was re-occluded, and the area at risk and infarct size were defined by Evans blue and TTC staining. Using planimetry, the infarct as a percentage of the area at risk was determined.

Results:

Group	1	2	3	4
Area at Risk/Area of LV (%)	26.1 ± 7.6	22.0 ± 7.6	27.2 ± 6.5	25.5 ± 6.5
Area of Infarct/Area at Risk (%)	76.7 ± 7.1	72.1 ± 8.7	58.8 ± 4.2*	54.3 ± 4.0*

*Significantly different from Groups 1 and 2 only by ANOVA ($p \leq 0.05$)

Conclusion: The primary beneficial effect of L-arginine in coronary artery occlusion is the prevention of reperfusion injury. Direct endothelial supplement by retrograde delivery offers no additional benefit during ischemia. These results may also suggest a greater effect of L-Arginine on direct neutrophil inhibition than previously reported.

1056 Early Evaluation of Unstable Angina

Wednesday, March 19, 1997, Noon–2:00 p.m.
Anaheim Convention Center, Hall E
Presentation Hour: 1:00 p.m.–2:00 p.m.

1056-13 A Novel Mobile Fluoroscopic Imaging System For Rapid Bedside Coronary Angiography

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Currently, coronary angiography requires fixed cath lab facilities and multiple personnel. The ability to perform coronary angiography rapidly at the bedside could be useful to determine arterial patency after thrombolysis, to assess chest pain after PTCA, and as an efficient technique for rapid "rule out" MI. This study was designed to determine whether a novel mobile angiographic system (MAS) (Digital mobile C-arm, OEC Medical Systems, series 9600) requiring a cardiologist and one assistant is capable of producing high quality angiograms. In 29 patients (70 vessels) undergoing elective cath or PTCA, we compared images obtained with both the MAS and conventional fixed equipment (Siemens HICOR). In all cases, the MAS was 100% accurate in detecting both insignificant narrowing as well as significant stenoses (> 50% luminal narrowing). There was complete concordance between systems for lesion location, TIMI flow, and the presence of collaterals. 32 stenoses were analyzed in detail, including five lesions studied before and after PTCA. Both quantitative and qualitative percent stenosis demonstrated similar value for lesion severity with both systems (R = 0.95, Kappa 0.77, $p < 0.001$ respectively). Accuracy of characterization of lesion morphology by the MAS was similar to the fixed system (calcification 80%, eccentricity 92%). These findings demonstrate that a mobile imaging system can produce high-quality coronary anglograms. This technique could reduce the expense and logistic difficulties associated with emergency angiography.

1056-14 Early Catheterization is Standard Strategy in Unstable Angina/NQWMI: Results from GUSTO IIb

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Despite considerable debate over the benefits of conservative vs early invasive management in unstable angina/NQWMI, limited data are available regarding practice patterns. We studied management strategies of 2249 unstable angina/NQWMI patients enrolled in GUSTO IIb in 181 US sites. Overall, a majority of patients (68%) had a cardiac catheterization (cath) as their only test, 66% within the first 48 hr. Very few had noninvasive testing alone (7.7%). For those who had both (10.2%), 68% had a noninvasive test after the cath. We then divided the unstable angina population using AHCPR unstable angina guideline criteria into prognostic risk groups (75% high, 21.4% intermediate, 2.4% low). Test use in these risk groups is shown below.

Risk Group (n)	No Test Performed	% of Patients Tested		Revasc
		Cath	NIT Only	
Low Risk (39)	7.1%*	79.5%*	20.5%*	31.0%
Interm. Risk (250)	10.7%	89.2%	10.8%	39.3%
High Risk (830)	16.0%	90.8%	9.2%	44.6%
NQWMI (819)	12.8%	92.6%	7.5%	57.1%

*$p < 0.05$ for differences in testing strategy by risk group

Conclusion: An invasive diagnostic evaluation has become the dominant strategy for pts with unstable angina/NQWMI. Given the high prevalence of this disease, and the potentially higher cost of invasive management, further studies evaluating the clinical benefit and cost of invasive management are warranted.

1056-15 Serum Troponin I Is More Sensitive For the Detection of Acute Ischemic Myocardial Injury Than Serum Myoglobin or CK-MB

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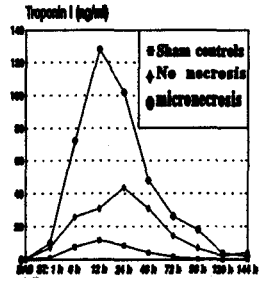
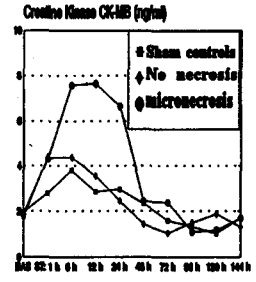
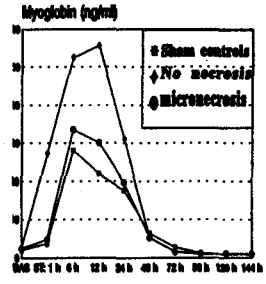
We have previously shown that an acute coronary stenosis that reduces resting flow causes release of serum troponin I (cTnI). This study addressed whether cTnI release under these conditions is associated with elevation of creatine kinase-MB (CK-MB) and myoglobin (M), with and without microscopic necrosis. In 12 pigs, an LAD stenosis to reduce flow by 40% was created and maintained for 7 days; in 5 pigs an identical sham operation was performed with no LAD stenosis. LV wall thickening was measured by echocardiography. Blood samples were drawn at baseline, 6, 12, 24 hours and daily for 7 days. CK-MB, cTnI and M were measured by fluorogenic ELISA assay. Hearts were examined for microscopic necrosis.







Results: Regional LV wall thickening was reduced from 39 ± 5% to 10 ± 6% ($p < 0.01$). Micronecrosis was found in 8 of 12 pigs and no necrosis in the other 4. Although cTnI ($p < 0.001$), M ($p < 0.05$) and CK-MB ($p < 0.05$) all increased in the LAD stenosis group, only cTnI distinguished this

WEDNESDAY POSTER